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ABSTRACT

The purpose of this study was to systematically investigate the effects of various orienting tasks on the recall of prose material. In particular, subjects were asked to read a prose passage while performing either a semantic (outlining the material) or a nonsemantic (circling e's) orienting task under either incidental or intentional recall instructions. The subjects were 180 male and female undergraduate Ohio University students. All subjects were shown an election game, "Mr. President." The subjects were then presented with a written description of the presidential candidates which they were to read with the experimenter. The subjects were divided into nine groups. Four groups were to outline the passage and four were to circle all the e's. Half of each of these groups were to try to recall the material (intentional groups) and half were not (incidental groups). A final group was provided with intentional instructions but no orienting task. The results indicated that the conditions under which various orienting tasks are carried out influence the subject's recall performance. There was increased recall in the intentional as compared to the incidental groups. (WR)

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The Effects of Instructions, Orienting Tasks and Intentionality on Prose Retention

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The Effects of Instructions, Orienting Tasks and Intentionality on Prose Retention

The effect of various orienting tasks on word recall has been extensively investigated during recent years. For example, Jenkins and his colleagues (Hyde and Jenkins, 1969, 1973; Till and Jenkins, 1973; Walsh and Jenkins, 1973) have shown that orienting tasks which necessitate semantic interaction with to-be-remembered words result in better recall than non-semantic tasks regardless of the subject's intention to recall. Similar procedures should prove to be an effective way to study several applied questions regarding the retention of prose materials.

Since much of our educational system requires the efficient recall of prose material, it is surprising that the effect of various orienting tasks on prose recall has not been more widely assessed. A few investigators have studied the effects of tasks such as outlining or summarizing prose material, but recall tests were given after the subject had spent up to an hour interacting with the material (e.g., Arnold, 1942; Stordahl and Christensen, 1956). The typical result obtained from these studies, no difference between groups, could be attributed to the fact that the experimenter had no control over what the subject did during the allotted study time. The assigned orienting task may only have occupied a small fraction of the subject's cognitive effort during the study period.

It was the purpose of this study to more systematically investigate the effects of various orienting tasks on the recall of prose material. In particular, subjects were asked to read a prose passage while performing either a semantic (outlining the material) or a nonsemantic (circling e's) orienting task under either incidental or intentional recall instructions. This

allowed us to approximate the conditions of earlier word studies so that comparisons with that work could be made.

We were particularly interested in assessing whether Jenkins' surprising result that intentional recall instructions do not influence recall regardless of the type of orienting task would hold up in prose materials. This finding was contrary to that reported by Mandler (1967) who found that intentional recall instructions improve performance on a nonsemantic task but do not on a semantic task. A clarification and extension of this result to prose materials is important since if Jenkins is right a person's attempt to learn any material will be more affected by the nature of the learning strategy he uses than by his intention to learn. In contrast, if Mandler is right intention to learn could overcome the detrimental effects of those activities which do not result in optimal interaction with the to-be-remembered material.

In order to further investigate this question we manipulated a third variable, strength of instructions, in order to cause subjects to interact with the material for varying lengths of time. This manipulation was thought to be important since one key way in which the Mandler and Jenkins studies varied was the time constraint. In Jenkins' studies the words were presented to the subjects at a fixed rate, thus restricting the time a subject had with each word. In Mandler's work, however, the subjects could look through the words several times at varying rates; hence Mandler's subjects had potentially more time to carry out beneficial mnemonic activities in addition to their other task. Jenkins' subjects may have been restricted from doing that.

The instructional manipulation employed here was primarily oriented toward changing the strength of the intentional recall instructions. It was hypothesized that subjects receiving instructions stressing subsequent recall

would allow extra time for additional mnemonic activities and hence would improve their recall. This should particularly be the case with nonsemantic tasks but may also be the case for semantic tasks. If the intentional instructions do not emphasize recall, subjects may not allow sufficient extra time for mnemonic activity, and their recall will not be improved under either semantic or nonsemantic tasks.

It should be noted that the time allowed for completing the various orienting tasks in this study is under each subject's control. It was decided to do this for two reasons. First, letting the subject control the time of the task does not artificially constrain the task and change its basic character. Second, unconstrained study times are probably more natural to the subject and hence should make the research more generalizable. The time duration of the various tasks was carefully measured, however. This allowed the measurement of two different dependent variables, the amount recalled and the amount recalled per unit time. This latter measure, efficiency, should help clarify whether the orienting tasks and boundary conditions influence recall because they force varying interaction times or because they provide a better quality of interaction with the material.

Methods

Subjects

One hundred eighty male and female undergraduate Ohio University students served as subjects.

Stimulus Materials

A paragraph consisting of declarative sentences concerning five fictitious presidential candidates served as the stimulus material. Each candidate had

four attributes (home state, campaign ability, area of expertise, and level of financial support). The five candidates and four attributes were described in 20 sentences presented in randomized order.

Procedure

All subjects were shown an election game, Mr. President. The subjects were then presented with a written description of the presidential candidates which they were to read with the experimenter. The subjects were divided into nine groups depending on the type of instructions, the type of orienting task and level of intentionality. Four groups of subjects were told to outline the passage (semantic task) and four were told to circle all the e's in the passage (non-semantic task). Half of each of these groups were told to try to recall the material (intentional groups) and half were not (incidental groups). Finally half of each of these groups differed on the nature of the instructions. One incidental E group and incidental outline group were given a standard set of instructions, the other incidental groups were told additionally to take as much time as they needed to do the task. One intentional E group and intentional outline group were given much stronger instructions than the other two intentional groups to both carry out their orienting task and remember the material. A final group, Group 9, was provided with intentional instructions, but no orienting task.

As soon as the experimenter finished reading the paragraph aloud, he started a stopwatch and the subjects began their task. The time each subject spent doing his task was recorded. After completion of the task an interpolated task lasting approximately 30 seconds was given. Subjects were then asked to write down all the information they could about each candidate. Subjects were given two and a half minutes to recall. In order to be scored correct a

sentence had to contain the correct name and attribute for a presidential candidate.

Results

Recall Analysis

A 2 (strength of instructions) x 2 (intentionality) x 2 (task) analysis of variance was done on the first eight groups. Instructions, intentionality, and task were all highly significant, F (1,152) = 23.00, $p < .001$, F (1,152) = 19.91, $p < .001$ and F (1,152) = 27.17, $p < .001$, respectively. The means in Table 1 show intentional recall instructions result in better recall than

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Insert Table 1 about here

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incidental, and OUTLINE results in better recall than E. Also the modified instruction groups (Groups 5-8) had better recall than Groups 1-4. The instructions X intentionality interaction was also significant, F (1,152) = 6.05, $p < .05$. This interaction shows that intentional recall under strong instructions significantly improved recall over the incidental group while this was not the case in the weak instructions condition.

In order to compare the recall of subjects left to their own mnemonic activities (Group 9) with recall of subjects given E and OUT instructions, a one-way analysis of variance was done. The three groups were all intentional but differed only in the task performed: none, E, and OUTLINE. The effect of the task was significant, F (2,57) = 4.54, $p < .05$.

Efficiency Analysis

A 2 (instructions) x 2 (intentionality) x 2 (task) analysis of variance was done on the first eight groups with (recall/time to do task) as the dependent

variable. Only intentionality was significant, F (1,52) = 5.32, $p < .05$. The INT groups were more efficient than the INC groups.

A one way analysis of variance involving E - Intentional, Outline-Intentional and Group 9 was done with the same dependent variable. The task was significant, F (2,57) = 11.46, $p < .01$. Group 9, which only read the passage, was far more efficient than either of the other two groups.

Discussion

The results from this experiment show that the conditions under which various orienting tasks are carried out greatly influence the subject's recall performance. As expected, the subjects did allow additional time under the strong instructional condition. Thus there was increased recall in the intentional as compared to the incidental groups. Subjects under the weak instructional condition did not allow for this additional time, and their recall did not differ in the incidental and intentional conditions.

It should be noted, however, that the strong instructional manipulation had the same effect for both semantic and nonsemantic tasks. Hence neither the predictions from Jenkins' nor Mandler's work were completely confirmed on prose materials. Contrary to Jenkins' conclusions, intentional instructions do lead to better recall if the task allows and encourages the subject to perform additional mnemonic activities. Contrary to Mandler's findings intentional instructions improve recall under not only nonsemantic but also semantic tasks.

Mandler's finding that intentionality improves recall only on nonsemantic tasks may well be due to the quality (or efficiency) of the semantic task he employed. As was noted in the efficiency analysis, when subjects are left to

their own means (READ ONLY) they carry out very efficient mnemonic activities, more efficient than either the outline or the circle e condition. Prior studies of our own have shown that a sort condition for prose materials similar to the one Mandler used with words is far more efficient than either outlining or circling e's and most closely approximates the subjects "own task" efficiency. Since Mandler required his semantic incidental subjects to use a highly efficient task for a considerable period of time, their recall was equivalent to the semantic intentional groups. In our study outlining the material was not as efficient a task as sorting the material. Therefore the subjects' own additional mnemonic activities performed under intentional instructions increased recall greatly as compared to the outline incidental subjects.

It should be noted that the finding of subjects "knowing" the best activity or combination of activities for best recall is consistent with considerable memory work. Imposed labeling tasks on older children and adults, for example, have been shown to hinder recall performance presumably because it keeps the subject from performing his own idiosyncratic mnemonic activities (Hagen, Meacham, and Mesibov, 1970). This presents a dilemma for the educator hoping to improve students' abilities to recall what he has read from prose materials. He cannot simply impose a given orienting task. If he does so he will only help those individuals with exceptionally poor mnemonic activities and may hinder performance of better subjects. Apparently the goal must be to help the individual develop his own set of activities or combinations thereof which is optional for him.

Two additional findings from this experiment need to be considered. First, the fact that the instructional manipulation did not significantly influence

the efficiency score indicates that the only reason that the strong instructions improved recall is that they forced a longer period of interaction with the materials. Second, the impact of intentionality on recall is clarified by the main effect for intentionality in the efficiency analysis. Apparently whenever subjects are told to recall (and they are given sufficient time and encouragement to do so) they initiate good mnemonic techniques which improve the efficiency of recall per unit time. This reiterates the point raised earlier that subjects can call upon "good" mnemonic techniques when they are asked to do so in order to improve their recall.

These last two points imply that various boundary conditions affect subjects performance on prose tasks in two principal ways. One is to call in better programs or mnemonic activities and the other is to encourage him to stay at the memory task longer regardless of the efficiency of the activities he is carrying out. Educators should keep both of these factors in mind in their attempts to improve a student's performance.

In conclusion, the investigation of various orienting tasks or mnemonic activities on the retention of prose materials appears to be a fruitful framework to follow. This approach, consistent with the theory of memory put forward by Craik and Lockhart (1972), suggests a number of new research problems, the investigation of which should help us better understand the retention of prose materials. Finally, calculation of efficiency measures may help experimenters clarify how their manipulations are influencing recall.

Table 1

Recall, Time to Complete Task, and Efficiency Scores for All Groups

Group		Dependent Variable		
		Recall	Time	Efficiency
Weak Instructions				
1	E INC	.8	103	830
2	OUTLINE INC	2.5	370	745
3	E INT	1.4	102	1375
4	OUTLINE INT	3.1	301	1144
	READ ONLY	2.5	89	3276
Strong Instructions				
5	E INC	1.9	184	1166
6	OUTLINE INC	2.8	527	740
7	E INT	3.4	294	1308
8	OUTLINE INT	5.5	577	1016

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